



Ekahau Positioning Engine 4.4

User Guide

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Ekahau tags must always be used in compliance with the user environment and instructions contained in the User Manual for the tags.

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1 Introduction

Welcome to Ekahau Positioning Engine (EPE), the core element of Ekahau Real-Time Location System. It leverages standard 802.11 wireless networks and state of the art location tracking algorithms to locate people or assets using Ekahau's Wi-Fi Location tags or any supported Wi-Fi enabled laptop or PDA. This user guide helps you in understanding how to install and use the EPE.

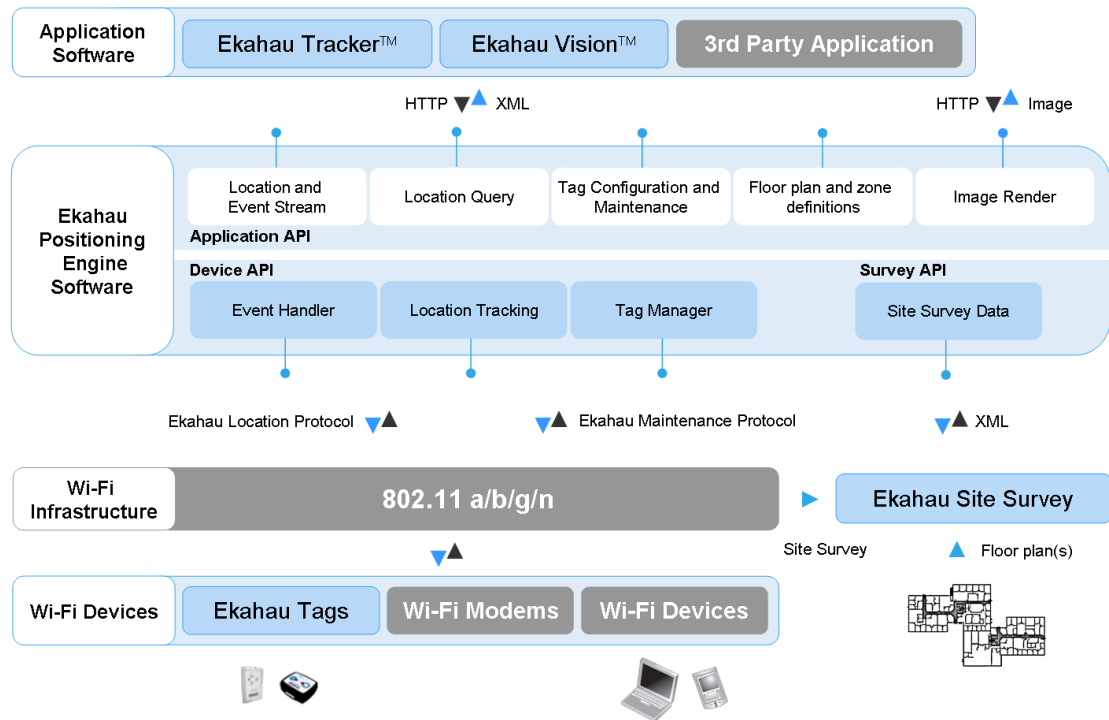
1.1 Ekahau Real-Time Location System

Ekahau RTLS (Real-Time Location System) is a quick and easy way to locate people and assets. With Ekahau RTLS, you can improve your business operations, save money and become more efficient. Once in use, Ekahau RTLS keeps key employees within easy reach and decreases the time it takes to find vital pieces of equipment or inventory. By streamlining operations, Ekahau RTLS allows you to focus your time and resources to more important details. Ekahau RTLS makes sure that people and things can be found - in the right place, at the right time.

Award Winning Concept





The wireless networks that are used for data and voice today provide an excellent platform for building accurate location-tracking systems. Unlike other proprietary systems, Ekahau's system relies on standard 802.11 wireless networks to deliver a comprehensive real-time location system (RTLS) for locating your valuable equipment and people in real time. Because the existing wireless network infrastructure is used, deployment is more cost effective where a wireless network is already in use. This provides additional justification for installing new networks. Deployment of Ekahau RTLS does not interrupt network activities or affect other network communications.

With Ekahau RTLS, the positions of equipment and people are automatically updated and can be delivered to other systems and personnel that call for this information. The fact that information about the needed equipment or persons is readily available leads to cost savings, because the assets are utilized more efficiently and the workflow is optimized. Moreover, the system enables new processes, such as the automatic routing of security personnel to the location where a tag alarm button was pressed or a tamper switch was activated.



Product Components

Ekahau RTLS is a whole tracking solution for asset and people tracking. It consists of the following integrated components

Component	Description	Supported Platforms
 Ekahau Positioning Engine™	Server software for location tracking, Wi-Fi tag configuration and management. HTTP / XML API for applications.	Windows® XP, Windows® 2003 Server
 Ekahau Site Survey™	Application for creating and editing positioning models.	Windows® XP, Windows® 2000, Windows® Vista
 Ekahau Vision™	End-user application for grouping, locating and viewing the location of people and assets in real time, monitor events, and invoke notifications or alarms.	Windows® XP, Windows® 2003 Server
 Ekahau Tracker™	End-user application for real-time tracking, event monitoring, dispatching alarms and analyzing the locations of assets and people.	Windows® XP
Ekahau Wi-Fi Tags	Wi-Fi location tag	-

Component	Description	Supported Platforms
Ekahau Client	Software based solution to provide location tracking, capabilities for Wi-Fi enabled devices. Reference implementation and Ekahau Tag Protocol documents available to Located by Ekahau™ partners.	Windows® Vista, Windows® XP, Windows® 2000, Windows® Mobile 6, Windows® Mobile 2005, Windows® Pocket PC 2003, Windows® CE 4.2, Windows® CE 5.0

1.2 This Product

This chapter provides an overview of product capabilities and features, highlighting the new features in this release.

1.2.1 Overview

Ekahau Positioning Engine is the brain of the Ekahau RTLS. It is a web service that runs on a dedicated Windows® server. The features have been designed to make system deployment, tag management and system administration easy and efficient. The web service architecture makes integration to other systems simple, HTTP based API can be accessed from virtually any platform and programming language.

1.2.2 Ekahau Positioning Engine Features

Ekahau Positioning Engine has a easy-to-use web browser user interface and it provides the following functionality:

- Ekahau Positioning Engine allows wireless configuration of Ekahau Wi-Fi Tags. The tags can be assigned into groups to support various tag management and deployment activities.
- The patented location tracking algorithm receives signal strength measurements from Ekahau Wi-Fi tags, compares the received measurements to an existing reference data and a positioning model, and calculates accurate location estimates.
- Event Handler receives events such as call button presses or tamper switch alerts from tags, routing them to applications and including the location of the tag that initiated the event.
- Systems and devices management that automates management tasks and monitors the system.
- Open application APIs for integrating 3rd party applications to the system. The APIs provide location feeds, location queries and events to the application, using APIs that comply with web standards.

1.3 System Requirements

Ekahau recommends installing Ekahau Positioning Engine on a dedicated server running Windows® 2000, Windows® XP Professional, or Windows® 2003 Server. The server must have at least Intel® Pentium® 4, 1 GB RAM, and 500 MB available HD space.

Recommended Hardware Setups

Use Case	Recommended Hardware
Tracking area below 50.000 ft ² (5.000 m ²), less than 100 tags	Windows® XP Professional Intel® Pentium® 4 1 GB RAM
Tracking area below 500.000 ft ² (50000 m ²) and less than 500 Tags	Windows® XP Professional or Windows® 2003 Server Intel® Pentium® 4 or Intel® Xeon® 1 GB RAM
Tracking area more than 500.000 ft ² (50000 m ²) or more than 500 tags	Windows® 2003 Server Intel® Xeon® 2 GB RAM

Supported Web Browsers

Ekahau Positioning Engine administration user interface is accessible with a web browser. Supported web browsers are Microsoft Internet Explorer 6 or newer and Mozilla Firefox 1.0 or newer.

JavaScript must be enabled in the web browser option to make some of the actions work.

1.4 Technical Support

Ekahau provides technical support free of charge for all customers for 30 days. Customers who have purchased Ekahau Support will receive Ekahau Support services for 12 months from the date of purchase.

Ekahau Support includes:

- All upgrades and patches for the product(s) and documentation purchased
- Free-of-charge support via e-mail (preferred) and telephone during regular business hours (PST, EST, GMT+2)

Bug fix patches are free of charge for all customers.

To renew your Ekahau Support, please contact your Ekahau representative or sales@ekahau.com.

2 Getting Started

This chapter describes how to install and start using the Ekahau Positioning Engine product.

2.1 What's New

This section provides an overview of the new product features and the changes that have been made to previous versions. If you are new to the Ekahau Positioning Engine product, you may decide to skip this section and proceed to subsection *Installer on page 5*.

2.1.1 Features

New Ekahau Positioning Engine Features in version 4.4

- New supported devices
 - Ekahau T301-BD tag
 - Ekahau Client 4.0
 - Text messages can be sent to tags from the Ekahau Positioning Engine user interface and Messaging API
 - Menu API can be used, for example, to implement application specific pre-defined responses to messages
- Aruba Networks Integration
 - Minimal bandwidth consumption and increased tag battery life with supported ArubaOS version
- Tag configuration form requires less input from the user, by default the tags preserve the wireless network, IP address and port settings set using Ekahau Activator.

New Ekahau Positioning Engine Features in previous version 4.3

- Presence detection based on tag IP address or associated access point MAC address
- Zone Enter and Zone Exit events have intelligent smoothing when a tracked device is close to the edge of the zone. False enter/exit events are automatically filtered by EPE
- Battery lifetime estimates for tag configurations
- Positioning Model can be Updated without changing model ID number

2.2 Installation

This chapter describes how to install Ekahau Positioning Engine.

2.2.1 Installer

Launch the Installer and follow the on-screen instructions to finish the installation. An existing installation will be automatically upgraded just by running the installer.

Configuration Parameters

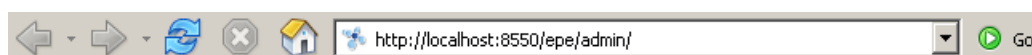
The following parameters can be set to customize TCP / UDP ports and to optimize Ekahau Positioning Engine performance by allocating system resources.

Installation Parameter	Description
Dedicated Server Mode	Select the Dedicated Server Mode if the Ekahau Positioning Engine is running on a dedicated server. This option is recommended for production use.
Multi-Purpose PC Mode	If Ekahau Positioning Engine is installed on a PC that is running other applications (for example Ekahau Location Survey or development tools), select this option.
Migration	If the installation folder contains a backup copy of a Ekahau Positioning Engine database, the installer asks if you want to restore database contents from the backup file.
Main Server Port	This is the TCP port number for Ekahau Positioning Engine Administrator user interface, Application Programming Interface (API) and Ekahau T201 Wi-Fi Tag maintenance calls.
Location Protocol (UDP)	UDP port on which Ekahau Positioning Engine is listening to Ekahau Location Protocol (ELP) events
Maintenance Protocol(UDP)	UDP port on which Ekahau Positioning Engine is listening to Ekahau Maintenance Protocol (EMP) calls
T301 Firmware Update (UDP)	UDP port through which Ekahau Positioning Engine updates T301 tag firmware
T201 Location Update (TCP)	TCP port on which Ekahau Positioning Engine is listening to location updates from T201 tags
T201 Location Update (UDP)	UDP port on which Ekahau Positioning Engine is listening to location updates from T201 tags
Database Server (TCP)	TCP Port on which the Ekahau Positioning Engine database is running
Server Shutdown (TCP)	Ekahau Positioning Engine shutdown script sends the shutdown command to this TCP port. Change the port number if it is already in use.

A license file is not needed during the installation process. The license file(s) is/are uploaded after installation via the administrator user interface. For instructions, see subsection *Licenses on page 12*

2.2.2 After Installation

The Ekahau Positioning Engine administrator user interface can be accessed with a web browser. The service address is **http://<Engine host IP address>:8550**. The default user name / password is **admin/admin**



Note

The default password for the **admin** user should be changed immediately after the first login. The password can be changed from **Users** page by clicking on the **admin** user in the user list.

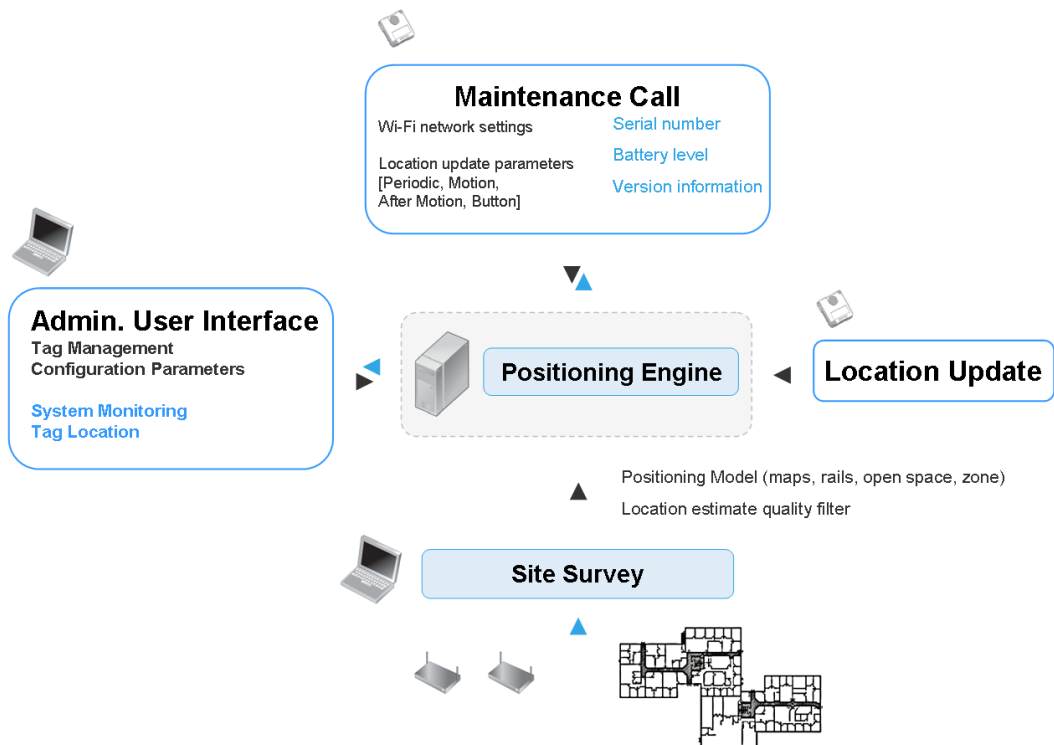
3 Ekahau Positioning Engine

This chapter describes the Ekahau Positioning Engine product features and functions, and the user interface.

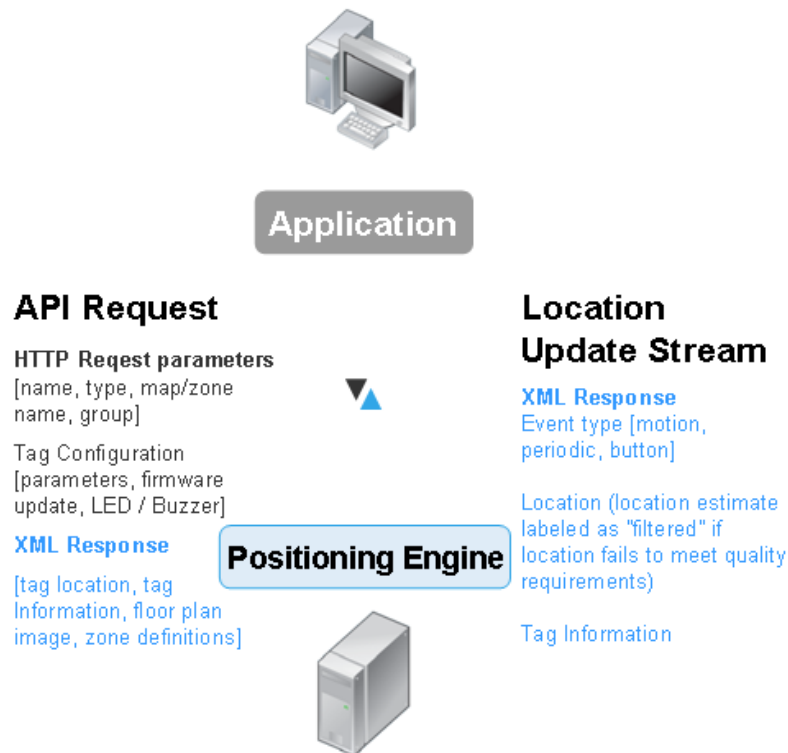
Ekahau Positioning Engine enables over-the-air configuration and management of Ekahau Wi-Fi tags. It provides an easy-to-use web browser user interface for defining and editing tag configuration parameters in order to support various application requirements. For example, tags can be configured to update the location in real time, during and/or after a detected motion, or when the tag's alarm/acknowledgment button has been activated. The active configuration of one or more tags can be changed with a single click.

Ekahau Wi-Fi tags connect to Ekahau Positioning Engine automatically upon configurable intervals ("maintenance call") to synchronize the configuration information, thus allowing the user or an application to edit the tag's configuration also after it has been deployed. The user may also request one or more tags to blink LEDs or play the tag's buzzer. When connected to Ekahau Positioning Engine, the tags will report certain parameters (serial number, battery level, firmware version) that can later be used to find them. The user may also define tag property values and categorize tags into groups that can also be used as search options while managing or deploying the tags. The user may also set a default configuration that is automatically associated with all new tags connecting with the Ekahau Positioning Engine service for the first time.

When the tags are taken into use, they are configured to contact the Ekahau Positioning Engine service to update the location information whenever enabled location update events take place. There are four different event types: periodic (for example, once every 10 minutes), during detected motion, after detected motion, and when the tag's button has been pressed.



For the application developers, Ekahau Positioning Engine is a web service. The location information is available for applications through an open HTTP request / XML response based Application Programming Interface. The location algorithm applies user defined pass / fail criteria to filter out location estimates that do not meet the application specific accuracy requirements. The developers do not have to understand how the Wi-Fi tags are configured and how the location algorithm works. They can concentrate their application design and development efforts on translating the location update events into valuable information.



3.1 System

The system page provides an overview of the system status.

Ekahau Positioning Engine

System Tags Groups Configs Models Users Help

System

Welcome to Ekahau Positioning Engine, admin.

Status

System Status	
Version	4.4.0
Build Number	29109
Started	2008-09-10 10:42:32
Uptime	12 days
Number of Tags	4 of 11000

Activity	Count
Location Update Events	2011 (2011 ELP, 0 UDP, 0 TCP, 0 NET)
Locations	1998
Filtered Locations	14
Maintenance Calls	126 (126 EMP, 0 T201)
Counters Started	On Startup
Reset	Reset activity counters

Actions

[Log File](#) | [Licenses](#)

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3.1.1 System Status

Parameter	Description
Version	Version number
Build number	Product build number
Started	Date and time when the Ekahau Positioning Engine service was started
Uptime	How long the Ekahau Positioning Engineservice has been running (Current time - Start time)
Number of Tags	Current number of tags in the system, and the maximum number of software license permits. If the license limit is exceeded, the system page displays a notification.

3.1.2 Activity

Parameter	Description
Location Update Events	Number of received location update events from tags (periodic, motion, after motion, button)
Locations	Number of location estimates that passed the set location quality filter
Filtered Locations	Number of location estimates that did not pass the set location quality filter
Maintenance Calls	Number of maintenance calls from the tags
Counters Started	Time when the counters were reset

Activity counter values can be used to verify that the system is working as expected. To reset the counter values, click the **Reset Activity Counters** link.

3.1.3 Log File

Ekahau Positioning Engine log file contains information about system activity, including errors and warnings.

3.1.3.1 Log Levels

Log level configuration allows the user to edit the number and type of logged system events or errors. No changes are needed to log levels, changes are only needed for troubleshooting purposes. By default, the Engine logs all system warnings and errors. Restarting the Engine will set the log levels back to the default value.

Engine API Calls

Log Application-initiated HTTP requests and received parameters.

Maintenance Calls (T201)

Log maintenance calls from T201 tags.

Location Update Events (T201)

Log tag-initiated location update events.

Maintenance Protocol Calls

Log maintenance calls from tags, or Wi-Fi devices using Ekahau Maintenance Protocol.

Location Protocol Events

Log location update events from tags, or Wi-Fi devices using Ekahau Location Protocol.

SQL Statements

Log performed SQL statements for all database queries.

Other Engine Categories

Log other Ekahau Positioning Engine events, default level INFO.

All Other Categories

Logging for all other categories.

3.1.4 Licenses

License details are listed here. An Ekahau Positioning Engine software license limits the number of tags in the system. Each tag in the tag list requires a license, and only the listed tags are located. To free a license, tags which have been removed from use can be deleted from the tag list. Tags are deleted through the tag property page. For instructions, see subsection *Tag Properties on page 18*

Each new uploaded license file increments the tag limit. Uploading two separate 100-tag license files equals uploading one 200-tag license file.

3.1.4.1 Upload New License

To upload a new license file, click the **Browse...** button first to locate the license file in the file system. Then click the **Upload** button. After a successful upload the number of license files and the tag limit will be incremented in the license summary section.

3.2 Tags

This page lists the tags that have completed a maintenance call or sent a location update event to Ekahau Positioning Engine. The search options above the list allow you to filter the listed tags in many ways. The list can be sorted by clicking the column headers. The check box on the left side of each row can be used to select one or many tags for further actions (see subsection *Actions on page 20*). **All** and **None** buttons below the check box column allows the user to select or deselect all tags with a single click.

Tags are configured and assigned into groups via the **Actions** option below the list. Once a tag has been associated with a configuration, the tag will automatically receive all changes made to the configuration. Tags that have pending configuration changes or commands are listed with **bold** font. The **Maint** column will be highlighted in red color if the tag has not completed a maintenance call according to the configuration parameters.

Tag properties (name, custom text, movement profile) can be viewed and edited by clicking the tag serial number link. Configuration changes and commands (LED, Buzzer, Firmware upgrade) may be applied to the tag through the tag properties page as well. To modify the properties of many tags at the same time, first select the tags from the list and then click the **Advanced...** button below the list. If a tag for any reason fails to apply the configuration parameters or commands, the tag will be highlighted in red color in the list. The tag properties page will display information pertaining to why the configuration could not be applied.

Tag groups can help you to manage and monitor the tags before and after the tags have been deployed.

Tip

New tags that have not yet been assigned a configuration can be listed by selecting the **<none>** option from the Config search option list.

3.2.1 Tag List

By default, the tag list is ordered by last location update time, and only the 100 most recent updates are listed ("**Most Recent**" view in Tags view list).

Tag List Columns

Column	Description
Tag	Serial number of an Ekahau Wi-Fi tag. Placing the mouse pointer over the serial number will display further details. Clicking the link will open the tag properties page, where many operations can be performed.
Name	Name parameter assigned for the tag. Each tag can be named by the asset or individual associated with the tag.
MAC	MAC address of the tag.
Config	Name of configuration (set of configuration parameters) currently in use.
Batt	Battery level received from the tag during the latest maintenance call or location update. The battery level is highlighted in red color when the percentage is below the configured "low battery" limit. This limit can be set through the epe.properties file, by default located in C:\Program Files\Ekahau\Ekahau Positioning Engine\conf
Map	Map from the last location update that passed the location estimate quality requirements. The location is highlighted in orange color if the engine has received successive location update events but the location estimates have failed to meet the requirements. "Filtered" location estimates are never displayed in the tag list. They can be viewed through the tag properties page.
Zone	Zone from last successful (see the Map column description above) location update.
Site*	Site name from last successful presence update. *This column is visible only when the presence option is enabled in the EPE license.
Loc	Relative time when the last successful location update was received.
Maint	Relative time when the tag performed the last maintenance call.

3.2.2 Search Options

Search options allow you to list tags based on many parameters. Next, you can use the **Actions** button to quickly modify the configuration of the listed devices.

The following sections describe the available search options. The listed tags match all set search parameters, when more than one search parameter is applied.

3.2.2.1 Tags

Most Recent

By default, the tag list displays the 100 most recent location updates. The number of the most recent tags can be configured through the configuration files.

No Location

Lists the tags that have completed a maintenance call, but have not been located by the system so far. These tags have most likely just been added to the system and have completed one maintenance cycle.

Low Battery

Lists the tags that have reported a battery level that is below the low battery limit in the last maintenance call or location update.

Pending Commands

Lists the tags that have pending commands, such as configuration changes, LED / Buzzer events, a Firmware upgrade, or manual commands set through the Tag properties / Advanced commands page.

Location Update Overdue

Lists the tags for which the scheduled periodic location update time has expired.

Last Location Update Filtered

The latest location update was completed successfully, but the resulting location estimate fails to meet the location quality requirements.

Maintenance Overdue

Lists the tags for which the scheduled maintenance call time has expired.

Command Error

A tag configuration update, a LED / Buzzer event, a Firmware upgrade, or manual commands could not be applied successfully. The Tag Properties page will display an error description.

T301

Lists all Ekahau T301 series tags in the system.

T201

Lists all Ekahau T201 tags in the system.

All Tags

Lists all tags in the system. When the search options above the tag list are applied, the Tags view is automatically set to this option.

3.2.2.2 Group

Lists the tags assigned to a selected group. When empty, the tags assigned to any or none of the groups are listed.

3.2.2.3 Config

Lists the tags using the selected configuration. When empty, tags using any or none of the configurations are listed. The <NONE> option lists tags for which no configuration has been set

3.2.2.4 Find

Entering text into the **Find** field lists the tags with fully or partially matching text in the Tag (serial number), Name, MAC, Map, Zone or user-defined Custom field.

3.2.2.5 Find Keywords

The advanced search options include keywords that can be used to limit the text search into one field. Usage: enter "keyword=value" into the **Find** field and press the **Find** button.

SERIAL

Lists the tags with matching text in the Serial number field.

```
SERIAL=T301-0906
```

MAC

Lists the tags with matching text in the MAC address field.

```
MAC=00:10:C6:97:99:21
```

```
MAC=97:99
```

NAME

Lists the tags with matching text in the user-defined Name field.

```
NAME=Pump1203
```

CUSTOM

Lists the tags with matching text in the user-defined Custom data field.

```
CUSTOM=Baxter
```

TYPE

Lists the tags with matching text in the Tag type field.

```
TYPE=T201
```

```
TYPE=T301
```

VERSION

Lists the tags with matching text in the Firmware version or Hardware version field.

```
VERSION=1.0.1
```

MAPNAME

Lists the tags with matching text in the Last location map / Floor name field.

```
MAPNAME=5thfloor
```

ZONENAME

Lists the tags with matching text in the Last location zone name field.

```
ZONENAME=engineering
```

SITENAME

Lists the tags with matching text in the Last location site field.

```
SITENAME=warehouse2
```

BATTERY

Lists the tags with the last reported battery level between the given percentage range.

```
BATTERY=0-50
```

Lists tags with battery level below 50% and above 0%.

LASTLOC

Lists the tags with the last successful location update within the given time.

```
LASTLOC=20s
```

Lists the tags updated within the last 20 seconds.

```
LASTLOC=5m
```

Lists the tags updated within the last 5 minutes.

```
LASTLOC=2h
```

Lists the tags updated within the last 2 hours.

```
LASTLOC=6d
```

Lists the tags updated within the last 6 days.

LASTLOCNOT

Lists the tags for which location has not been updated within the given time period.

```
LASTLOCNOT=20s
```

Lists the tags not updated within the last 20 seconds.

```
LASTLOCNOT=5m
```

Lists the tags not updated within the last 5 minutes.

```
LASTLOCNOT=2h
```

Lists the tags not updated within the last 2 hours.

```
LASTLOCNOT=6d
```

Lists the tags not updated within the last 6 days.

LASTMAINT

Lists the tags that have completed a maintenance call within the given time period.

```
LASTMAINT=5m
```

Lists the tags that have completed a maintenance call within the last five minutes.

LASTBUTTON

Lists the tags that have reported a button press event within the given time period.

```
LASTBUTTON=8h
```

Lists the tags that have reported a button event within the last eight hours.

3.2.3 Tag Properties

Clicking the tag serial number will open a page listing the tag properties. Here you can change the device's active configuration, update the firmware, or send manual commands to the tag. Having associated a tag with a configuration, the device will receive all modifications you make to the configuration upon the next scheduled maintenance connection. If the tag's configuration has been changed but the tag has not yet received the commands, these commands are displayed under the Commands Pending heading

Tag Property	Description
Serial Number	Tag serial number
MAC	Tag MAC address
Type	Tag type information
Version (firmware/hardware)	Tag firmware version and hardware revision information
Created On	Date and time when the tag completed the first maintenance call
Active Configuration	Assigned tag configuration
Battery Level	Battery level reported during the last location update or maintenance call
Signal Normalization	For supported devices, name of the signal normalization function is displayed. List of supported devices can be found on the Config page

Tag Property	Description
Last Location Update	Last location estimate (that has passed the location quality filter). The location can be viewed on the floor plan by clicking the map link. The update type (periodic, button press, motion) link after the update date & time will open a list of access points and signal strengths that were used to estimate the latest location.
Last Presence Update	Last location resolved using a presence model. This property is visible only when a presence model is active in the system.
Last Maintenance Call	Time when the last maintenance call was completed

3.2.3.1 Actions

User Data

Each tag has two user defined properties: **Name** and **Custom**

Name property can be used to set the name of the person or asset associated with the tag. You can search and find tags by name by using the tag list **Find** function. Maximum length for the name is 30 characters.

Custom field can be used to store additional information about the tag or associated asset (make, model, year, month) or person. Custom field text can also be used to find the one or many tags matching with the given **Find** field search criteria.

Member of Groups check boxes can be used to apply the group membership selection for the tag(s).

After editing the user data fields or group selections, click the **Save** button to apply the changes.

Commands

Buzzer Plays the tag's buzzer after the tag has completed the next maintenance call. Buzzer duration can be selected from the drop-down menu.

LED Flashes the tag's LEDs after the next scheduled maintenance call. LED flash duration can be selected from the drop-down menu.

Set Config Selects a configuration for the selected tag.

Request info Requests the tag to resend the properties (serial number, version information etc.)

Request config dump Select this option to download tag configuration from the tag upon the next maintenance call. The downloaded configuration can be copied into a text file. The file can be uploaded to create a new configuration through the Configs page. For upload instructions, see subsection *Upload a Configuration File on page 30*

Manual commands commands Use this field to send manual commands to the tag. The commands must be valid tag command line interface commands. The tag will return an error message if the entered commands could not be applied.

Update Firmware Update tag software version upon next maintenance call.

Message and **Message Type** fields can be used to send a text message to a tag with a message display. Instant messages are only displayed immediately when they are received, standard messages are stored in the tag's memory.

The **Send Commands** button below the command list saves the selected commands. The tag will complete the requested commands after completing the next maintenance update. The tag list will highlight the tag in red color if the tag has failed to apply and acknowledge the selected commands.

Clear button will remove the commands that are currently pending.

Note

Clear button will not remove tag configuration change specific commands that are currently pending, only buzzer, LED, info request, configuration dump, firmware update or manual commands.

Create New Group

The tag(s) can be assigned to a new group by entering the group name and clicking **Create New Group** button. The new group is automatically created during the process.

Delete

Deletes tag from the tag list. The tag will re-appear in the list after completing the next location update or maintenance call. Thus tags should be deleted after they have been switched off.

3.2.3.2 Commands Pending

This section lists the commands that are currently pending for the tag.

3.2.3.3 Configuration Dump from Tag (T201 only)

After the tag has completed the configuration download request, the configuration parameters are listed here. By copying the downloaded configuration into a text file, you can create a new configuration by using the Upload configuration File on the Config page. For instructions, see subsection *Configs on page 22*

3.2.3.4 Latest Delivered Commands (T301 only)

This section lists the latest commands and command parameters the tag has received. This is useful information if tag's configuration has been changed with manual commands.

3.2.4 Actions

To change the configuration of multiple devices, first apply search criteria to list the devices you wish to configure. Next, select the tags from the list, and after that, use the Actions option on the Devices page to send commands or to set the device configuration.

3.2.4.1 Add To Group

Selected tags can be assigned to existing groups through this action.

3.2.4.2 Create New Group

This action creates a new group and assigns the selected tag to the created group.

3.2.4.3 Set Configuration

Use this option to change the configuration of selected tags

Note

When applying a configuration with WPA2 encryption enabled the EPE will check if T301-A tags that are being configured support this encryption method. WP2 is supported in tag FW version 2.1.2 and later.

3.2.4.4 Remove from Group

When the **Group** search option has been used to filter the listed tags, removal from group action is available in the **Actions** list. This option removes the selected tags from the group that was used to list the tags.

3.2.4.5 Advanced...

The **Advanced...** button opens a page similar to Tag Properties, but here you can change the properties or send commands to many tags at the same time.

Tip

To add or remove many tags to/from more than one group, you should first apply the search options to list specific tags, then select all of the listed tags, and finally set to which groups the selected tags should belong by clicking the **Advanced...** button

3.3 Groups

The Groups page lists the groups that have been created either through the **Groups** page or the **Tags** page. A group list displays the group names and the number of tags assigned to each of them. Tags cannot be added to groups on this page. Only the group names and descriptions may be edited. The groups may also be deleted. Tags may belong to any number of groups.

To add a new group, follow the **Create a New Tag Group** link.

3.4 Configs

The Configurations page allows you to define and edit the tag configurations. You may use the **Set Default** option to select one of your configurations as a default configuration that will automatically be set to all new tags contacting Ekahau Positioning Engine for the first time. New configurations may be created based on existing configurations by using the **Duplicate** configuration option.

3.4.1 Create a New T201 Configuration

A T201 configuration is a collection of T201 tag command line interface commands, which are sent to the tags associated with the configuration. Please see the T201 user guide for further documentation about the available commands and parameters.

3.4.1.1 General

Each configuration is identified by Name. Further information about the purpose or intended usage may be entered into the Description field.

3.4.1.2 Network

Tag network parameters are used to associate the tag with a wireless network in order to gain access to the Ekahau Positioning Engine service. Network parameters also define roaming parameters between many SSIDs (Service Set Identifier, "network name") and the channels that are to be scanned during location updates and roaming.

SSID

Service Set ID for the Wi-Fi network. An optional WEP encryption key and a key index can be set for each SSID. The WEP encryption key is entered in ASCII format. A 64/40 bit key is five characters, and a 128/104 bit key is 13 characters long.

Roaming and Scanning

If roaming between SSIDs is required, the tags must scan all available networks. If only one SSID is in use, tag scanning may be limited to this SSID. Some Wi-Fi access points may have been configured not to respond to devices scanning all networks, in which case the scanning must be set to **"scan only current SSID"**

Scan Channels

Tag network scanning and the resulting signal strength measurements can be limited to selected channels. The tags should be set to only scan the channels in use, as the number of scanned channels affects the tag battery life.

3.4.1.3 Ekahau Positioning Engine

Engine parameters define the IP address of the host running the Ekahau Positioning Engine service. Location update and maintenance call ports and the maintenance interval are also defined here.

Parameter	Purpose
IP Address	IP address of host running Ekahau Positioning Engine
Protocol	Tags can use either a TCP socket connection or a UDP datagram when updating the location
Location Update Port (TCP)	The port on which Ekahau Positioning Engine listens for TCP location update events
Location Update Port (UDP)	The port on which Ekahau Positioning Engine listens for UDP location update events
Maintenance Interval	How often the tag must initiate a maintenance call to receive configuration changes
Maintenance Port (TCP)	The port on which Ekahau Positioning Engine listens to maintenance calls from the tags

3.4.1.4 Periodic Location Update

Enabling this parameter schedules periodic location update events from the tags associated with the configuration.

Parameter	Purpose
Periodic Wake up	Enable or disable periodic location updates
Interval	When enabled, this parameter defines how often a periodic location update takes place
Scan Count	How many times the tag scans the network

3.4.1.5 Motion Sensor

Motion sensor configuration parameters are used to enable or disable motion-triggered location update events. Motion sensing can extend battery life significantly. If long battery life is required, then Ekahau recommends enabling update events either upon or after detected motion. The motion threshold value is used to set the motion sensitivity. The sensitivity value should match the use case, and should be tested with each asset type, so that an optimal number of events is generated. Sensitivity affects battery life if unnecessary motion events are triggered.

Parameter	Purpose
Motion Wake up	Enable or disable location updates upon detected motion
Scan Count	How many times the tag scans the wireless network when motion is detected
After Motion Wake up	Enable or disable location updates after detected motion
Scan Count	How many times the tag scans the network

Parameter	Purpose
Motion Threshold	<p>Motion sensor sensitivity</p> <p>1 = Very sensitive</p> <p>5 = Default sensitivity for people and asset tracking</p> <p>10 = Motion event is triggered after a few seconds of continual movement</p>

3.4.1.6 Button

The Button wake up parameter enables / disables the tag call button. Button Sound can be used to play the buzzer sound upon sending a button event to Ekahau Positioning Engine.

3.4.1.7 Advanced

Any valid tag configuration parameters can be set through the Advanced configuration field. Write each command on a separate line.

3.4.2 Create a New T301 Configuration

A T301 configuration is a collection of T301 tag configuration parameters, which are sent to the T301 tags associated with the configuration. Please see the T301 user guide for further documentation about the available commands and parameters.

3.4.2.1 General

Each configuration is identified by Name. Further information about the purpose or intended usage may be entered into the Description field.

Scan Channels

Tag network scanning and the resulting signal strength measurements can be limited to selected channels. The tags should be set to only scan the channels in use, as the number of scanned channels affects the tag battery life.

3.4.2.2 Advanced Network Settings

Tag network parameters are used to associate the tag with a wireless network in order to gain access to the Ekahau Positioning Engine service. Network parameters also define roaming parameters between many SSIDs (Service Set Identifier, "network name") and the channels that are to be scanned during location updates and roaming.

3.4.2.2.1 Network

Scan Method

Generic scan method is a 802.11 compatible method for acquiring signal strength reading for access points within tag's range. **Aruba** scan method is compatible with Aruba Networks ArubaOS 3.3.1.11 and later.

SSID 1 & SSID 2

Service Set ID for the Wi-Fi network. An optional encryption key and a key index can be set for each SSID. The encryption key is entered in ASCII format. A WEP 64/40 bit key is five characters, and a WEP 128/104 bit key is 13 characters long. WPA2 encryption key length must be between 8 and 63 characters.

Note

T301-A tag software version 2.1.2 and later support WPA2 encryption.

SSID 2 Association

This parameter defines whether the T301 should roam between the two Wi-Fi network or connect only with SSID 1 and scan SSID 2 for signal strength readings.

Broadcast Probe

When enabled the T301 scans all Wi-Fi networks within range.

3.4.2.2.2 Tag IP Settings

IP Setting

This parameter specifies how tags get their IP-address.

3.4.2.2.3 Ekahau Positioning Engine

Engine parameters define the IP address of the host running the Ekahau Positioning Engine service. Location update and maintenance call ports and the maintenance interval are also defined here.

Parameter	Purpose
IP Address	IP address of host running Ekahau Positioning Engine
Location Update Port (UDP)	The port on which Ekahau Positioning Engine listens for UDP location update events
Maintenance Port (UDP)	The port on which Ekahau Positioning Engine listens to maintenance calls from T301 tags

3.4.2.3 Periodic Location Update and Maintenance

Enabling this parameter schedules periodic location update events from the tags associated with the configuration.

Parameter	Purpose
Periodic Location Update	Enable or disable periodic location updates
Location Update Interval	When enabled, this parameter defines how often a periodic location update takes place
Periodic Maintenance	Enable or disable periodic maintenance calls
Maintenance Interval	How often the tag must initiate a maintenance call to receive configuration changes

3.4.2.4 Sensors

Motion sensor configuration parameters are used to enable or disable motion sensor triggered location update events. Motion sensing can extend the T301 battery life significantly. The motion sensitivity profile should match the use case, and should be tested with each tracked asset type, so that an optimal number of events is generated.

Parameter	Purpose
Motion Sensor	This parameter disables motion sensing or sets the sensor sensitivity level
Motion Update Method	Location updates take place either in motion and after motion or only detected after motion
Motion Update Interval	This parameter defines how often location updates take place while the T301 is in motion and how long the T301 has to remain in place before after motion location update event takes place
Motion Stagnant Event	Ekahau T301B and T301BD can be configured to update location if the tag has not moved within given period.
Motion Stagnant Threshold	This parameter specifies the time period after which the motion stagnant update will be triggered (if no motion events have been detected during the given period)
Tamper Sensor	Enable or disable the tamper sensor
Location Beacon Sensor	The optical tamper sensor in the T301A can be enabled to trigger a location update if the tag is detached from the item it has been attached to. The T301 must be attached to the tracked item before the tamper sensor configuration is activated.

3.4.2.5 Advanced Scan Settings

These parameters can be used to increase the number of wireless network scans during or following specific location update events, thus providing higher location precision (but potentially shorter battery life).

Parameter	Purpose
Initial Scan Count	Tag reports only the highest RSSI measurements per Access Point received during initial scan cycles
Delay Between Initial Scans	Delay between initial scan cycles
After Motion Scan Count	Number of supplementary scans following after motion event, each scan is includes initial cycles scan if it is enabled
Button Scan Count	Number of supplementary scans following button press event, each scan is includes initial cycles scan if it is enabled
Tamper Scan Count	Number of supplementary scans following tamper sensor event, each scan is includes initial cycles scan if it is enabled

3.4.2.6 Battery Lifetime Estimation

Estimated tag battery life is based on the configuration profile parameters, such as the number of SSIDs, channels, periodic location update and maintenance intervals. If motion sensor is enabled, the number of motion events per hour or per day can be manually entered in the data fields. To update the estimate click the **Estimate** button.

Parameter	Purpose
Movement Frequency	If motion sensor is enabled in the configuration profile enter the estimated number of motion events per hour or per day. The battery life estimate will include motion (and after motion events).
Average Movement Duration	How long the movement will typically last

3.4.3 Create a New T301-I Configuration

A T301-I configuration is a collection of T301-I tag configuration parameters, which are sent to the T301-I tags associated with the configuration. Please see the T301-I user guide for further documentation about the available commands and parameters.

3.4.3.1 General

Each configuration is identified by Name. Further information about the purpose or intended usage may be entered into the Description field.

3.4.3.2 Network

Tag network parameters are used to associate the tag with a wireless network in order to gain access to the Ekahau Positioning Engine service. Network parameters also define roaming parameters between many SSIDs (Service Set Identifier, "network name") and the channels that are to be scanned during location updates and roaming.

SSID 1 & SSID 2

Service Set ID for the Wi-Fi network. An optional encryption key and a key index can be set for each SSID. The encryption key is entered in ASCII format. A WEP 64/40 bit key is five characters, and a WEP 128/104 bit key is 13 characters long. WPA2 encryption key length must be between 8 and 63 characters.

Note

T301A tag software version 2.1.2 and later support WPA2 encryption.

SSID 2 Association

This parameter defines whether the T301 should roam between the two Wi-Fi network or connect only with SSID 1 and scan SSID 2 for signal strength readings.

Scan Channels

Tag network scanning and the resulting signal strength measurements can be limited to selected channels. The tags should be set to only scan the channels in use, as the number of scanned channels affects the tag battery life.

Broadcast Probe

When enabled the T301-I scans all Wi-Fi networks within range.

3.4.3.3 Tag IP Settings

This parameter specifies how tags get their IP-address.

3.4.3.4 Ekahau Positioning Engine

Engine parameters define the IP address of the host running the Ekahau Positioning Engine service. Location update and maintenance call ports and the maintenance interval are also defined here.

Parameter	Purpose
IP Address	IP address of host running Ekahau Positioning Engine
Location Update Port (UDP)	The port on which Ekahau Positioning Engine listens for UDP location update events
Maintenance Interval in Idle Mode	How often the tag will initiate a maintenance call to receive configuration changes when the tag is in idle mode

Parameter	Purpose
Maintenance Interval in Active Mode	How often the tag will initiate a maintenance call to receive configuration changes when the tag is in active mode
Maintenance Port (UDP)	The port on which Ekahau Positioning Engine listens to maintenance calls from T301 tags

3.4.3.5 Periodic Location Update

Enabling this parameter schedules periodic location update events from the tags associated with the configuration.

Parameter	Purpose
Periodic Wake up	Enable or disable periodic location updates
Interval	When enabled, this parameter defines how often a periodic location update takes place

3.4.3.6 Motion Sensor

Motion sensor configuration parameters are used to enable or disable motion sensor triggered location update events. The motion sensitivity profile should match the use case, and should be tested with each tracked asset type, so that an optimal number of events is generated.

Parameter	Purpose
Motion Sensitivity	This parameter disables motion sensing or sets the sensor sensitivity level
Motion Update Method	Location updates take place either in motion and after motion or only detected after motion
Motion Update Interval	This parameter defines how often location updates take place while the T301-I is in motion and how long the T301-I has to remain in place before after motion location update event takes place

3.4.3.7 Advanced Scan Settings

These parameters can be used to increase the number of wireless network scans during or following specific location update events, thus providing higher location precision (but potentially shorter battery life).

Parameter	Purpose
Initial Scan Count	Tag reports only the highest RSSI measurements per Access Point received during initial scan cycles
Delay Between Initial Scans	Delay between initial scan cycles

3.4.4 Upload a Configuration File

Downloaded tag configurations can be uploaded to Ekahau Positioning Engine to create a new configuration. Follow these steps to complete this procedure:

1. Request a configuration download from a tag
2. After the tag has completed the next maintenance call, go to the **Tag properties** page. Select and copy the configuration commands in the browser window from **Configuration Dump from Tag** section and save the copied text as a text file
3. Edit the correct Wi-Fi network security parameters into the text file. The tag will not include a correct WEP encryption key in the downloaded configuration.
4. Go to the **Configs** page and follow the **Upload a Configuration File** link
5. Name the new configuration and select the saved configuration file from the file system by clicking the **Browse...** link
6. Click **Upload** to finish

3.4.5 Set Default Configuration

All new tags connecting with Ekahau Positioning Engine for the first time can be assigned to use one of the configurations automatically. The default configuration is defined here.

3.4.6 Duplicate

If you want to create a new configuration by using parameters from an existing configuration as a template, select a configuration from the **Duplicate** list, and push the **Duplicate** button. A new configuration will appear in the configuration list.

3.4.7 Tag Firmware

To upgrade tag firmware, follow the instructions below

1. Upload the firmware image file (.zip) by clicking the **Upload a New Tag Firmware** link
2. Give a name to the firmware version, something which you can use to identify the correct version when it is sent to the tags later on
3. Select the tag type, **T301** for T301 firmware image files, **T201** for T201 firmware image files
4. Click **Browse...** to locate the firmware file on your computer
5. Click **Upload** to upload the file

After uploading the firmware image file the update can be initiated through the tag properties page.

Caution

Before updating the firmware please read the firmware version release notes, it may not be possible to downgrade to an older version

1. Find the tag(s) to be updated on the **Tags** page using the search parameters
2. Select the tag(s) to be updated
3. Click **Advanced...** button below the list
4. Select the firmware image in the **Firmware update** section and click **Set** button

3.4.8 Device Support Information

The device Support file version and the list of supported devices are displayed here. The file can be replaced by uploading a new file.

3.5 Models

A Positioning Model includes the reference signal strength measurements that the positioning algorithm uses to calculate location estimates. A Presence Model contains an IP address and/or access point MAC address table, which are used to update tags presence information. The user can upload and store many model files in the Ekahau Positioning Engine database, but only one positioning model (and optionally presence model) can be active at a time. If there is no active model, the tags will not be located when Ekahau Positioning Engine receives the location update events. By clicking the positioning model name, a properties page is displayed

File Name

The name of the uploaded file.

Description

The description given to the file when it was uploaded.

Version

The model version number. Application developers may use this information to find out if the active model file has been edited. The version number is set automatically.

Size

The size of the file in kilo bytes.

Modified On

The date and time when the model was modified.

Status

Displays the words "Active model" for the model that is currently in use.

3.5.1 Upload New Model

Model files can be uploaded through the Ekahau Location Survey user interface, or manually by clicking the **Upload a New Model** link on the **Models** page. Supported file formats are **.esx** (Ekahau Location Survey) and **.epx** (Presence).

3.5.2 Updating a Model

When a model file has gone through minor changes (added or edited zones, rails, open spaces, access point selections, or added new floors) the existing model file should be updated (instead uploading and activating a new model file). Follow these steps to update a model file

1. Click on the **File Name** column in the Models list
2. Click **Update** button on the Model Properties page
3. Browse for the file on your computer
4. Click **Save** button

3.5.3 Model Properties

The Model Properties page lists the model file details, such as type and file size. The model description can be edited. Click the **Save** button to apply the changes to the description. The Model details link lists the maps and zones included in the model file.

To delete a model click the **Delete** button. The active model cannot be deleted.

Caution

Deleting a model that has been active may make the last location unavailable for tags that have not been located after the active model was changed (the tag's last location refers to a model that has been deleted).

3.6 Activating a Model

To activate a positioning model:

1. Click model the file name in the Positioning Models list
2. Click the **Set Active** button

Once the model has been activated, it is displayed in bold font in the model list.

3.7 Users

The Users page is used to add new users to the system, or to edit the password of the admin user.

3.7.1 Create a New User

New users are created though the **Create New User** form, which can be opened from the **Users** page.

Login Name

The login name of the user. The Web browser asks for the user credentials when the system is accessed. The browser will cache the user name and password. The user must authenticate again if the browser application is closed.

Description

An optional free-form description of the user.

Organization

Optional organization information.

Password

The user password must be entered twice.

Role

There are four different user roles in the system:

Administrator

This user has access to all system features. The administrator is also the only role with rights to create new users and edit existing user profiles.

Poweruser

Powerusers can access all the features that an administrator can, except for user management.

Tag Operator

A tag operator is allowed to edit tag properties, change tag configuration, send commands to tags and delete tags, but not allowed to change the active positioning model or add / edit user profiles.

Viewer

This user is not allowed to edit any data in the system. A viewer only has privileges to view the tag list and the tag locations.

4 System Configuration

4.1 Ekahau Client Connector

Client Connector is a software adapter running on the EPE server that enables location tracking of mobile devices running Ekahau Client.

Ekahau Client running on a laptop or a PDA appears as a "software tag" in the EPE user interface. Tag configurations in the system cannot be used to configure these tags, Client Connector requests location updates every three seconds by default.

Supported Ekahau Client devices can be found on **Configs** page in the EPE user interface.

4.2 Network Configuration

The Ekahau RTLS should be given a dedicated VLAN or SSID which allows the Wi-Fi Tags to communicate with the EPE server and roam seamlessly throughout the tracking area. Tags should be able to roam between access points at an RSSI value of -75dBm or better for the strongest access point. To ensure this functionality, sufficient overlap of AP cover areas should be maintained. The overlap can be verified using Ekahau Location Survey tool. The Tags must be able to maintain a continuous network connection during the roaming process without a change in IP address, drop of network connectivity, or change in WLAN security parameters.

A port-based security policy should be implemented on a firewall between the Ekahau RTLS VLAN and any secure network based on the communication ports outlined below.

Wi-Fi tags and Ekahau Positioning Engine Server

A dedicated wireless network segment or Wireless VLAN is recommended to support communications between Ekahau RTLS Wi-Fi Tags and the Ekahau Positioning Engine. This dedicated wireless network must be allowed to communicate to the Positioning engine server via TCP and UDP on the ports listed in the table below. If possible the VLAN or SSID should be dedicated to Ekahau Wi-Fi tags. Each tracked device currently requires a unique IP address, a sufficient number of IP addresses must be allocated for the maximum number of tracked devices. In addition, this campus-wide VLAN created for the tags should consist of one subnet only, and the tag IP address should not change until the DHCP lease time has expired. This will improve the tag battery life significantly.

Port Number	Type	Description
8545	UDP	To locate Laptops / PDAs running Ekahau Client (Ekahau Client Connector)
8546	UDP	To locate Laptops / PDAs running Ekahau Client (Ekahau Client Connector)
8548	TCP	Ekahau T201 location update
8549	UDP	Ekahau T201 location update
8550	TCP	Ekahau T201 tag maintenance protocol and Ekahau Positioning Engine user interface
8552	UDP	Ekahau Location Protocol
8553	UDP	Ekahau Maintenance Protocol

Port Number	Type	Description
8554	UDP	Ekahau tag firmware update

Application Server and Ekahau Positioning Engine Server

Ekahau RTLS applications or 3rd party software application communicating with EPE via HTTP API require the use of TCP port 8550

5 Ekahau Positioning Engine Maintenance

This chapter describes the recommended maintenance operations.

Tip

Ekahau Positioning Engine Database contents should be backed up periodically to prevent loss of data in case of a hardware failure.

5.1 Backing up the Ekahau Positioning Engine

Database contents should be backed up periodically. Follow the instructions below to create a backup file:

1. Go to the \bin folder in the Ekahau Positioning Engine installation folder, located by default in C:\Program Files\Ekahau\Ekahau Positioning Engine
2. run **database-backup.bat**

After running the backup command the database backup file can be found in C:\Program Files\Ekahau\Ekahau Positioning Engine\backup

5.2 Restoring the Ekahau Positioning Engine

If database data becomes corrupted due to a hardware failure or other disaster, the following steps restore the database contents from a backup file.

1. Copy the database backup file to C:\Program Files\Ekahau\Ekahau Positioning Engine\backup
2. Stop the Ekahau Positioning Engine service
3. Run database-restore.bat in C:\Program Files\Ekahau\Ekahau Positioning Engine\bin
4. Start the Ekahau Positioning Engine service

5.3 Downgrading to an Earlier Version

EPE installer does not support downgrading to an earlier version. To downgrade EPE you must first manually uninstall the software before an earlier version can be installed on the same machine. If you have a database backup file created with the earlier EPE version you want to install, this backup file should be copied to "backup" folder created under the destination install folder.

If you have just recently upgraded EPE version, and you have not created a database backup file, the "backup" folder under the installation folder does already have the database backup information the previously installed version needs. In this case follow these steps to downgrade the software version:

1. Start the EPE uninstall from **Start > Programs > Ekahau > Ekahau Positioning Engine > Uninstall**
2. Click **"No"** when the uninstall wizard asks if you wish to backup the database
3. After the uninstall is complete, start the previously installed EPE installer
4. Check the **"Restore database after install"** option in the installer

If this option is not enabled, please cancel the installation and make sure your database backup file is in "backup" folder under the destination installation folder and start the installer again.

5.4 Editing the Ekahau Positioning Engine Configuration Parameters

Port numbers set during the installation can be changed by running C:\Program Files\Ekahau\Ekahau Positioning Engine\bin\config-ports.bat with the following command line parameters

- Main Server port (TCP)
- Server shutdown port (TCP)
- Database connection port
- Ekahau Maintenance Protocol port (UDP)
- Ekahau Location Protocol port (UDP)
- T201 location update port (TCP)
- T201 location update port (UDP)
- T301 Firmware update port (UDP)

Restoring Default Configuration

An example of restoring the default configuration:

1. Shutdown Ekahau Positioning Engine from **Start > Programs > Ekahau > Ekahau Positioning Engine > Server > Shutdown**
2. Open the command prompt and type in the following commands
`cd c:\Program Files\Ekahau\Ekahau Positioning Engine\bin\
config-ports.bat 8550 8559 8558 8553 8552 8548 8549 8554`
3. Start Ekahau Positioning Engine from **Start > Programs > Ekahau > Ekahau Positioning Engine > Server > Startup**

5.5 Changing Allocated Memory Size

The size of allocated memory can be changed by running C:\Program Files\Ekahau\Ekahau Positioning Engine\bin\config-memory.bat with the following command line parameters

- Number of CPUs
- Minimum memory size in MB
- Maximum memory size in MB
- Optional parameter: Memory reserved during startup (Default is 1/3 of minimum allocated memory size)

EPE running in dedicated mode (selected during installation) allocates EPE all the memory the computer has available, maximum size being 1500MB. If less than 1500MB has been allocated for EPE running in dedicated mode and more memory is added to the machine, config-memory.bat should be used increase the maximum allocated memory size.

If EPE is running in multi purpose mode, and system runs out of memory activating a positioning model, stop some of the services running on the server and allocate more for EPE with config-memory.bat. Before allocating more, you must to know how much memory has been allocated by the installer. This you can find out from C:\Program Files\Ekahau\Ekahau Positioning Engine\conf\install.properties file. It has the following parameters:

cpu.count

memory.min (MB)

memory.max (MB)

Use the same CPU count and minimum memory size and increase the maximum memory size by 200 until you can activate the model (the maximum allocated memory size is 1500).

Guidelines for Selecting Minimum and Maximum Values

Ekahau recommends installing EPE in dedicated mode, where minimum and maximum are set automatically. If minimum value is set too low in multi purpose mode, the initial positioning model activation after service startup will take longer. Optimal maximum size in multi purpose mode depends on the positioning model size.

Changing Maximum Memory to 1000MB

This example sets CPU count to 2, minimum memory size to 128MB, maximum memory size to 1000MB.

Note

Ekahau Positioning Engine service must be restarted to apply the changes.

1. Open the command prompt and type in the following commands
`cd c:\Program Files\Ekahau\Ekahau Positioning Engine\bin\
config-memory.bat 2 128 1000`
2. Shutdown Ekahau Positioning Engine from **Start > Programs > Ekahau > Ekahau Positioning Engine > Server > Shutdown**
3. Start Ekahau Positioning Engine from **Start > Programs > Ekahau > Ekahau Positioning Engine > Server > Startup**

5.6 SNMP Monitoring

Ekahau Positioning Engine runtime status can monitored via SNMP, the system will respond to SNMP v1 and v2 requests. EPE implements the MIB-II system Group (1.3.6.1.2.1.1) .

SNMP agent configuration parameters can be set though the system.properties file, by default located in C:\Program Files\Ekahau\Ekahau Positioning Engine\conf\ folder. The following table describes the available configuration parameters:

Parameter	Description
snmp.udp.port	Port on which EPE listens to SNMP requests. By default 8556
snmp.community	SNMP community key, by default public
snmp.sys.contact	System contact person
snmp.sys.descr	System description
snmp.sys.location	Physical location of the server

Parameter	Description
snmp.sys.name	Assigned name for the server running EPE. Typically this is the servers fully-qualified domain name.

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